REMARKS/ARGUMENTS

Claims 1, 2, 5, 6, 7 and 9 are amended. The amendments to the claims are for clarification purposes only and not amended to limit the scope of the claims; Applicants have merely explicitly stated what was already implicit in the claims. Claims 10-14 are added. Claims 1-14 are now pending.

The Office Action object to various Information Disclosure Statements filed in this application. With respect to the IDS filed on April 3, 2001, the Office Action indicates that this IDS is objectionable as it does not include a concise explanation of the relevance of references not in the English language. Upon review of Applicants' records, it is noted that this IDS included a copy of a Japanese Office Action which can be used to explain the relevance of Japanese references cited therein. (See, e.g., MPEP § 609.) Therefore, Applicants respectfully request the Examiner review these references and issue an initialed citation form accordingly.

With respect to the Information Disclosure Statements filed on February 1, 2001 and May 9, 2002, the Office Action indicates that documents listed in the art citation forms for these IDS's were not actually included. While Applicants' records clearly indicate that proper IDS's were filed, the references will be brought to the Examiners's attention again in another IDS.

Claims 1, 3, 4 and 7 are rejected under 35 U.S.C. § 103 as being unpatentable in view of U.S. Patent No. 6,073,032 to Keskitalo et al. ("Keskitalo"). In order for there to be a valid rejection based on obviousness, the cited art must show or suggest all of the claimed limitations. (See MPEP § 706.02(j)).

Among the limitations of independent claim 1, which are neither disclosed nor suggested in the Keskitalo reference are:

A

"an array antenna having M antenna elements linearly laid out on each side of a polygon having K sides, M being an integer of not less than one, K being an integer of not less than three . . .

The Office Action asserts that the Keskitalo reference discloses an antenna having multiple antenna array elements. However, there is no indication in the Office Action that Keskitalo has antenna elements arranged in a polygon as claimed. The Office Action suggests that it would have been obvious to modify the number of sectors in the Keskitalo reference so as to have a number equal to 3. Again, even with 3 sectors, there is no indication that that Keskitalo reference would arrange antenna elements as claimed. Additionally, Applicants refer to col. 5, line 55 to col. 6, line 3 of Keskitalo which discusses the arrangement of the antenna elements in the adaptive antenna array. Again, there is no discussion of disposing antenna elements in an antenna array as claimed. As such, it is asserted that independent claim 1 is patentable over the Keskitalo reference. Claims 3, 4 and 7 include the above reference limitations of independent claim 1 and include additional limitations which, in combination with the limitations of independent claim 1 are also neither disclosed nor suggested in the art of record. It is asserted that these claims are patentable as well. Reconsideration of the rejection of claims 1, 3, 4 and 7 under 35 U.S.C. § 103 is respectfully requested in light of the remarks above.

Claim 5 is rejected as being obvious over Keskitalo in view of U.S. Patent No. 6,192,066 to Asanuma. As discussed above, independent claim 1 includes limitations which are not shown in the Keskitalo reference. The Asanuma reference is similarly devoid of these limitations. As such, it is asserted that independent claim 1 is patentable over the art of record. Claim 5 includes the above reference limitations of claim 1 and includes additional limitations which, in combination with the limitations of independent claim 1, are also neither disclosed nor suggested in the art of record. It is asserted that claim 5 is patentable as well. Reconsideration of the rejection of claim 5 under 35 U.S.C. § 103 is respectfully requested in light of the remarks above.

Applicants appreciate the provisional allowance of claims 2, 6 and 9 if rewritten in independent form. Applicants choose to defer a rewriting of these claims until a final resolution of the above reference matters.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Dated: October 30, 2002

Respectfully submitted,

By_____

Steven S. Rubin
Registration No.: 43,063
DICKSTEIN SHAPIRO MORIN &
OSHINSKY LLP
1177 Avenue of the Americas, 41st Floor
New York, New York 10036-2714
(212) 835-1400
Attorneys for Applicant

Version With Markings to Show Changes Made

Claim 1. (Amended) An array antenna reception apparatus comprising: an array antenna having M [(M is an integer of not less than 1)] antenna elements linearly laid out on each side [(sector)] of a polygon having K [(K is an integer of not less than 3)] sides, M being an integer of not less than 1, K being an integer of not less than 3; K adaptive receivers each for receiving reception signals from the M antenna elements for a corresponding [sector] side, independently forming a directional pattern having a gain in a desired signal direction for the [sector] side, receiving a desired signal, and suppressing an interference signal; and a demodulated signal synthesizer for receiving K demodulated signals as outputs from said K adaptive receivers, weighting and synthesizing the signals, and outputting a demodulated signal for a user.

Claim 2. (Amended) An apparatus according to claim 1, wherein the direction pattern of each [sector] side of said array antenna is formed outside each side of the polygon.

Claim 5. (Amended) An apparatus according to claim 1, wherein said demodulated signal synthesizer performs a weighting synthesis [(maximum ratio synthesis)] so as to maximize a ratio [(SIR)] of desired signal power to interference power in weighting and synthesizing the K demodulated signals.

Claim 6. (Amended) An apparatus according to claim 1, wherein each of said K adaptive receivers comprises:

M despread means for receiving code division multiple access (CDMA) signals received by said M antenna elements and a determination symbol obtained by a hard determination for the demodulated signal [for] by a user, and despreading each of the M antenna reception signals using a desired user spread code,

a weighting synthesizer for forming a directional pattern based on antenna weights,

a demodulator for receiving the directional pattern and for estimating a transmission path,

a multiplier for multiplying a user determination symbol by [a complex transmission path estimation value as] an output from said demodulator to cancel a phase change caused by phase lock of a carrier wave,

a subtracter for subtracting an output from said weighting synthesizer from an output from said multiplier to detect an antenna weight control error,

delay means for delaying outputs from said M spread means in accordance with a processing time of said demodulator, and

antenna weight control means for controlling and outputting the antenna weights on the basis of a least mean square error (MMSE) so as to minimize average power of the antenna weight control error using outputs from said delay means and the antenna weight control error.

Claim 7. (Amended) An apparatus according to claim 1, wherein each of said K adaptive receivers comprises:

M despread means for receiving code division multiple access (CDMA) signals received by said M antenna elements and despreading each of the M antenna reception signals using a desired user spread code,

arrival direction estimation means for estimating an arrival direction from outputs from said M despread means,

antenna weight generation means for generating antenna weights from outputs from said arrival direction estimation means,

a weighting synthesizer for forming a directional pattern from the antenna weights,

and a demodulator for receiving the directional pattern and for estimating a transmission path.

Claim 9. (Amended) An apparatus according to claim 6, wherein:

said demodulator comprises transmission path estimation means for receiving an output from said weighting synthesizer and estimating an amplitude and phase of the

carrier wave,

complex conjugate operation means for obtaining a complex conjugate of a complex transmission path estimation value as an output from said transmission path estimation means, and

a multiplier for multiplying an output from said despread means by an output from said complex conjugate operation means to phase-lock the carrier wave.